Remarks/Arguments

In response to the Office Action, the Applicants offer the following remarks.

Claims 1 to 10, 13 to 17 and 30 to 32 are still pending and the patent application comprises eighteen (18) claims.

A. Rejections Under Sections 102 and 103

In the first Office Action, the Examiner rejected the claims as being anticipated by U.S. Patent 4,358,113 (McKinnon) and as being obvious over U.S. Patent 5,407,195 (Tiitola) in view of McKinnon. In the Final Office Action, the Examiner rejected claims 1, 6, 18 and 19 as being anticipated by Tiitola and claims 2 to 5 and 21 to 26 under 35 U.S.C. §103(a) as being obvious over Tiitola in view of McKinnon.

Now, in the third Office Action of February 2, 2006, the Examiner rejects:

- claims 1 to 6, 10, and 30 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,333,857 (Lallemand);
- claims 1, 6 to 9 and 13 to 16 under 35 U.S.C. §102(e) as being anticipated by PCT Application WO 03/097181 (McGrath *et al.*);
- claims 7 to 9, 13, 14, 31 and 32 under 35 U.S.C. §103(a) as being obvious over Lallemand;
- Claims 30 and 32 under 35 U.S.C. §103(a) as being obvious over Lallemand in view of U.S. Patent 4,059,269 (Tiitola); and

- claim 17 under 35 U.S.C. §103(a) as being obvious over McGrath *et al.* in view of U.S. Patent 6,273,835 (Battis).

The Applicants respectfully request reconsideration of these rejections in view of the following remarks.

B. Patentability of Claims 1 to 10, 13 to 17 and 30

The Applicants direct the Examiner's attention to the following highlighted features of independent claim 1 that are neither disclosed nor suggested by Lallemand or McGrath *et al.*:

1. A hockey stick blade with a shank and a blade element having a front external surface and a rear external surface, said hockey stick blade comprising:

   (a) a core made of thermo-expandable foam and extending along a longitudinal axis;

   (b) a first layer of fibers at least partially wrapping over said core; said first layer of fibers being impregnated with a suitable resin;

   (c) a second layer of fibers at least partially wrapping over said first layer of fibers, said second layer of fibers being impregnated with a suitable resin; and

   (d) **a sheet of thermoplastic material covering at least partially said second layer of fibers, said sheet of thermoplastic material forming part of one of said front and rear external surfaces of said blade element for increasing the impact resistance of said blade.**

According to MPEP § 706.02, in order to reject a claim under 35 U.S.C. § 102(b) as being anticipated a patent, the Examiner must determine that such patent teaches every aspect of the claimed invention either explicitly or implicitly. Any feature not directly taught must be inherently present.

1 Lallemand

As indicated in Lallemand, the superposed meshes 1, 2, 3 may be made from carbon, aramide, glass E, glass R, polyethylene HP (Dyneema), quartz fibers, etc. These meshes are impregnated with resin (such as pure or modified epoxy resin or thermoplastic resin) by using injection resin transfer molding (Resin Transfer Molding). The cured blade of Lallemand therefore comprises a foam core covered by meshes 1, 2, 3 that are impregnated with a suitable resin.

In the Office Action of February 7, 2006, the Examiner indicated that "[...] mesh fiber layers 1, 2, 3 [of Lallemand's hockey stick] are then impregnated and covered[1] with a thermoplastic resin. The outermost layer of material [the claimed external surface] may be considered the thermoplastic sheet."

The Applicants respectfully submit that the Examiner has erred in his assertion that Lallemand teaches a blade comprising "a sheet of thermoplastic material forming part of the external surface(s) of the blade for increasing its impact resistance" as specified in claim 1. Clearly, the mesh 3 cannot be qualified as a "thermoplastic sheet" since this mesh is of the same nature as the other meshes 1, 2 (i.e. fibers impregnated with a suitable resin) and there are no indications or suggestions that the mesh 3 is of different nature nor it is made of a thermoplastic sheet.

[1] The Applicants disagree with the Examiner's position that Lallemand discloses fibers covered by a thermoplastic resin since these fibers are rather impregnated with resin by using injection resin transfer molding.

The Applicants reiterate that a person skilled in art would never identify a layer of fibers impregnated with a suitable resin as being a sheet of thermoplastic material.

Hockey stick blades comprising layers of fibers impregnated with a suitable resin have been used for the last several past years and the Applicants are naturally not seeking patent protection for such a well-known construction, nor are the Applicants seeking protection for a hockey blade having an outermost external layer made of fibers impregnated with a thermoplastic material.

The Applicants rather seek patent protection for a novel and unobvious construction, namely a hockey stick blade further comprising **a sheet of thermoplastic material covering the outermost layer made of fibers** (fibers in which epoxy resin is injected, fibers in which thermoplastic resin is injected, pre-impregnated fibers or carbon fiber tapes pre-impregnated with epoxy, etc.).

The Applicants have made a significant advance in the art of hockey blade construction by recognizing that the impact resistance of the blade is increased by covering the outermost layer made of fibers with a sheet of thermoplastic material such that this sheet of thermoplastic material forms part of the external surface of the blade.

There are therefore no grounds for an anticipation rejection since Lallemand does not teach nor suggest a sheet of thermoplastic material as recited in claim 1.

In view of the above, the Applicants respectfully request withdrawal of the Examiner's rejection of independent claim 1 pursuant to 35 U.S.C. § 102(b) and allowance of claim 1. Because claims 2 to 10, 13 to 17 and 30 depend directly or indirectly from claim 1 and include by reference all of the features recited in claim 1, these claims are also patentable.

2 McGrath *et al.*

As indicated in McGrath *et al.*, the blade comprises layers 510 or plies 520 that may be made from fibers made of carbon, aramide, glass, polyethylene, ceramic, boron, quartz or polyester, or any other fiber that may provide the desired strength. The layers or plies are then impregnated with a suitable resin by using injection transfer molding (Resin Transfer Molding). The inventors also indicate that pre-impregnated fiber layers or plies can be used to form the uncured blade that will be inserted in the mold. The inventors further indicate that carbon fiber tapes pre-impregnated with epoxy can also be used.

In the Office Action of February 7, 2006, the Examiner indicated that "[t]hermoplastic material may be used as the resin and the outermost layer may be considered the thermoplastic sheet material."

The Applicants respectfully submit that the Examiner has erred in his assertion that McGrath *et al.* teaches a blade comprising "a sheet of thermoplastic material forming part of the external surface(s) of the blade for increasing its impact resistance" as specified in claim 1. Clearly, the layers 510 or plies 520 cannot be qualified as a "thermoplastic sheet" since they are made of fibers impregnated with a suitable resin.

The Applicants reiterate that a person skilled in art would never identify a layer of fibers impregnated with a suitable resin as being a sheet of thermoplastic material.

Hockey stick blades comprising layers of fibers impregnated with a suitable resin have been used for the last several past years and the Applicants are naturally not seeking patent protection for such a well-known construction, nor are the Applicants seeking protection for a hockey blade having an outermost external layer made of fibers impregnated with a thermoplastic material.

The Applicants rather seek patent protection for a novel and unobvious construction, namely a hockey stick blade further comprising **a sheet of thermoplastic material covering the outermost layer made of fibers** (fibers in which epoxy resin is injected, fibers in which thermoplastic resin is injected, pre-impregnated fibers or carbon fiber tapes pre-impregnated with epoxy, etc.).

The Applicants have made a significant advance in the art of hockey blade construction by recognizing that the impact resistance of the blade is increased by covering the outermost layer made of fibers with a sheet of thermoplastic material such that this sheet of thermoplastic material forms part of the external surface of the blade.

There are therefore no grounds for an anticipation rejection since McGrath *et al.* does not teach nor suggest a sheet of thermoplastic material as recited in claim 1.

In view of the above, the Applicants respectfully request withdrawal of the Examiner's rejection of independent claim 1 pursuant to 35 U.S.C. § 102(b) and allowance of claim 1. Because claims 2 to 10, 13 to 17 and 30 depend directly or indirectly from claim 1 and include by reference all of the features recited in claim 1, these claims are also patentable.

C. Patentability of Claims 31 and 32

Independent claim 31 reads as follows:

31. A hockey stick blade with a shank and a blade element having a front external surface and a rear external surface, said hockey stick blade comprising:

(a) a core made of thermo-expandable foam and extending along a longitudinal axis;

(b) a first layer of fibers at least partially wrapping over said core; said first layer of fibers being impregnated with a suitable resin;

(c) a second layer of fibers at least partially wrapping over said first layer of fibers, said second layer of fibers being impregnated with a suitable resin; and

(d) front and rear thermoplastic sheets covering at least partially said second layer of fibers, said front and rear thermoplastic sheets forming part of said respective front and rear external surfaces of said blade element for increasing the impact resistance of said blade, said front and rear thermoplastic sheets being made of thermoplastic material selected from the group consisting of polyethylene, polyurethane, polypropylene, polyester, polystyrene, polyvinyl chloride and cellulose acetate.

For the same reasons as those set for claim 1, the Applicants submit that independent claim 31 is patentable over Lallemand. The Examiner will also appreciate that nowhere in Lallemand does the inventor disclose or suggest the use of front and rear thermoplastic sheets made of thermoplastic material selected from the group consisting of polyethylene, polyurethane, polypropylene, polyester, polystyrene, polyvinyl chloride and cellulose acetate as recited in claim 31.

Hence, the Applicants respectfully request allowance of independent claim 31. Because claim 32 depends from claim 31 and includes by reference all of the features recited in claim 31, claim 32 is also patentable.

CONCLUSION

In view of the above remarks, it is submitted that each of pending claims 1 to 10, 13 to 17 and 30 to 32 is in condition for allowance and the rejections under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) should be withdrawn.

The Examiner is invited to call the Applicants' undersigned patent agent if any further amendments will expedite the prosecution of the present patent application or if the Examiner has any suggestions or questions concerning this application or the present response. If the claims are not believed to be in full condition for allowance, the Applicants respectfully request the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims pursuant to MPEP § 707.07(j) or in making constructive suggestions pursuant to MPEP § 706.03 so that the application can be placed in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,

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